

Qualities of Math Lessons

(Team 9: Stephanie, Taylor & Sylvia)

Good Lesson:

Agenda: An agenda should be provided for the students to know what will be covered. It should include the outline of the lesson and the activities written on the board.

Prior Knowledge: Provide resources (ie Khan Academy videos, Youtube math videos, VividMaths videos, and/or TEDEd videos) for students to access before class. This will prepare them to the new lesson.

Short Lecture: Teachers administering the short lesson and ensure students understand before continue with the lesson.

Engaging: Good lessons keep students actively involved and present in the classroom. Providing students with an activity to get/keep them interested in the topic at hand is essential to the effectiveness of the lesson. Having a hook is an example of a way that a teacher can engage students. It is for this reason, that hooks are an essential part of a good lesson.

Group Activity: Use group activities to apply what they just learned, reinforce their new knowledge, and allow students to provide one another with feedback. When students are provided with feedback, they are made aware of what they are doing incorrectly, and can then make efforts to improve their understanding. Hattie lists feedback as the second most important factor affecting achievement. Group activities involving peer/teacher feedback are therefore essential parts of excellent lessons.

Consolidation: To conclude a class the teacher should have some way of summarizing the content. Whether it be a handout of the summarized content for the students to have or having the students create a summary of their own. You may decide to give students a short quiz or problem set demonstrating their knowledge of the lesson.

Excellent Lesson

Agenda: A detailed agenda should be provided for the students so that they know what will be covered and when. It should include the outline of the lesson and approximately how much time will be spent on each activity. This schedule can be in the form of a handout, projected from a computer, or written on the board. It should also include the learning goals and/or success criteria. This allows students to prepare for transitions, and have a better understanding of both the purpose and expectations of a lesson.

Prior Knowledge: Provide resources (ie Khan Academy videos, Youtube math videos, VividMaths videos, and/or TEDEd videos) for students to access before class. This will prepare them to the new lesson. Building on prior knowledge is essential for student success. Hattie's list of factors that influence achievement ranks the prior achievement of students as the sixth most important. It is for this reason that prior knowledge is essential to an excellent lesson.

Short Lecture: While lecture time is an essential part of teaching, as well as an essential skill of a teacher, the length of one's lecture is vital to the effectiveness of a lesson. Lecturing students for prolonged periods of times causes them to lose focus and grow bored. Excellent lessons not only use minimal amounts of time for lecture, but the teacher administering the lesson uses this minimal time effectively. Rather than using lecture time to reiterate concepts that students can easily look up (such as the quadratic formula), those teaching excellent lessons use lecture times to explain the ideas that pertain to said concept. For instance, an excellent lesson on the quadratic formula would avoid the teacher going over the formula itself, and instead focus on what it represents mathematically.

Effectively Engaging: While a good lesson is engaging, an excellent lesson is effectively engaging. This means that the lesson not only keeps students' attention, but teaches them something while doing so. For instance, providing students with an activity such as a Sudoku engages them and focuses their attention. Although Sudokus use numbers, they do not have much to do with curriculum content. An effectively engaging lesson uses creative methods to convey content to students in a way that keeps them actively involved in learning, rather than simply keeping them actively involved in the lesson. Teachers of excellent lessons find their niche when it comes to engagement. One common way that teachers engage their students is by humor. However, this is not the only way. Those that teach excellent lessons find ways to involve their students that work for them.

Group Activity: Use group activities to apply what they just learned, reinforce their new knowledge, and allow students to provide one another with feedback. When students are provided with feedback, they are made aware of what they are doing incorrectly, and can then make efforts to improve their understanding. Hattie lists feedback as the second most important factor affecting achievement. Group activities involving peer/teacher feedback are therefore essential parts of excellent lessons.

Consolidation: To conclude a class, teachers should have some way of summarizing the content as well as assessing what the students actually learnt. One way to do this is to have a ticket-out-the-door where students are asked challenging knowledge questions that were to be understood based on the learning goals and activities performed during the lesson. Consolidation activities of an excellent lesson are always challenging. Hattie's list ranks providing students with a challenging goal as the twelfth most. They are NOT marked and this is type of assessment for learning allows students to openly answer the questions and demonstrate what they have learnt to the teacher.